Robert Cooper K6EDX
820 Tully Rd.
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Bk 3150

Western RADIO Amateur

Volume 7 Number 4

25c

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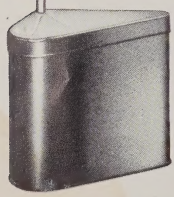

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DOUBLE CONVERSION for the COMMUNICATOR II

Ben Sandberg W6RJJ and Mike LaVere WA6CHJ

With activity on the two meter band increasing daily, it becomes more imperative for the receiver in use to display a resonable amount of selectivity. Crowded band conditions, harmonic interference from aircraft, a tendency towards increased power and other similar disturbances have made reception of weaker stations practically impossible. It was for these reasons that the authors, both owners of Gonset II receivers decided to add double conversion to this receiver.

The use of double conversion improves the image ratio and affords good selectivity in the I.F. amplifier. It is obtained in superheterodyne receivers by first converting the incoming signal to a rather high intermediate frequency, amplifying it, and then converting again, this time to a much lower frequency. The first intermediate frequency produces the necessary wide separation between the image and the desired signal, while the second one supplies the desired selectivity.

The modification is simplicity in itself and well worth the time (about 1 hour) and the slight expense (about $5) involved. As indicated in the block diagram, Fig. 1, the 6 MC signal which is the output frequency of the first oscillator-mixer tube) appears at the grid of the 6BH6 (VII), the existing second I.F. amplifier. It is at this point that we inject the output of our added second local oscillator. Since this tube is now intended to operate as a mixer it was found necessary to increase its bias. This was easily accomplished by changing the existing 120 ohm cathode resistor to a 5000 ohm. The output of this stage is our new second intermediate frequency, and as such, necessitates replacing the two remaining 6 MC I.F. transformers with ones resonant to the new intermediate frequency. It was decided to use 455 KC as the new intermediate frequency since transformers of this frequency are relatively easy to obtain. A word of caution at this point in that since one of the replaced I.F. transformers is used for detector service, two identical transformers should not be used. An "input" type similar to Miller Coil Co. 12-C1 can be used for the I.F. stage and an "output" type similar to Miller 12-C2 used for the detector stage.

The circuit chosen to generate the required local oscillation frequency was a modified Pierce, utilizing a 6455 KC crystal for excitation. The crystal frequency is not too critical and can be as much as 5 KC either side of that frequency. Since the mixer stage employs cathode bias, the amount of injection voltage is non-critical, but rather that an adequate amount be available. To insure this it was necessary to tune the oscillator plate circuit with a peaking coil and a capacitor as indicated in the partial schematic diagram, Fig. 2. If desired the capacitor used could be a trimmer. The tube chosen for the oscillator was a 12AT6 since these particular receivers are wired for 12 volt operation. A 6AT6 can be used in place of the 12AT6 for 6 volt receivers. B plus

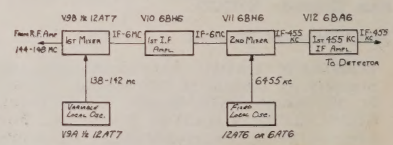


FIG. 1 Partial block diagram Gonset II receiver

voltage is obtained from the receiver B supply buss which feeds the plates and screens of the existing tubes.

The area adjacent to the R.F. amplifier, V8, located at the rear of the receiver chassis was utilized for the oscillator circuit. The crystal socket and crystal was located outboard directly behind the oscillator tube. Tie points were inserted where required to support the parts of the oscillator circuit. After wiring the oscillator per the schematic, Fig. 2, oscillation can be determined by measuring the voltage at the grid pin (pin 1). If the circuit is oscillating the voltage at this point will be approximately 3 to 4 volts negative.

The wiring of the oscillator should present no problems since lead dress is not critical, but as in all good wiring practice, lead length should be kept to

Continued on page 20

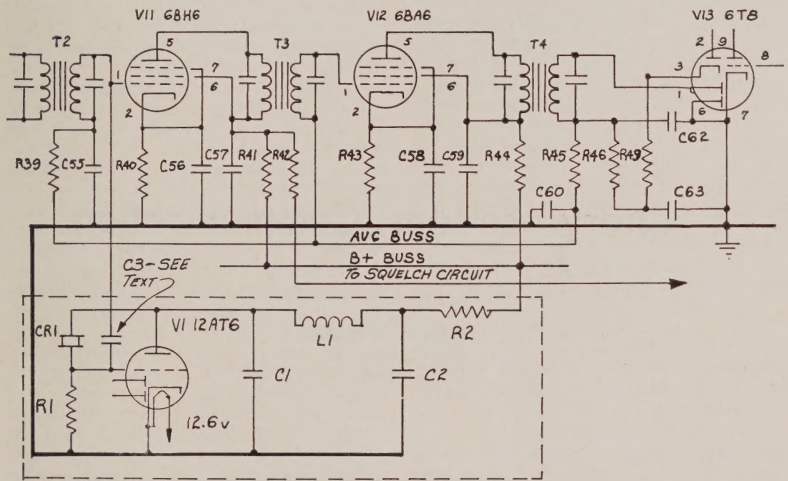


FIG. 2 Partial schematic gonset II receiver

NOTES: 1. New oscillator circuit shown within dashed lines.
2. Reference designations except those within dashed box conform to Gonset schematic.

Parts List

R39 270K ½W
R40 5000 ½W
R41 10K 1W
R42 220K ½W
R43 120 ½W
R44 10K 1W
R45 1.2M ½W
R46 1M ½W
R49 1M ½W
C55 .001MF. CER.
C56 .01MF. CER.
C57 .01MF. CER.
C58 .01MF. CER.
C59 .01MF. CER.
C60 .01MF. CER.
T3* 455KC I.F. (input)
T4* 455KC I.F. (output)
C62 50MMF CER.
C63 .01MF CER.
T2 6MC I.F.

OSC. CKT. Parts List

CR1 6455 KC XTAL (FT 243 Type)
R1 33K ½W Carbon
R2 100K 1W Carbon
C1 50MMF Ceramic
C2 .01MF Ceramic
L1 Peak. Coil, 500UHY. (Miller 617 or Equiv.)

* originally 6MC.

a History of Mans' Communication

by
Ed Marriner W6BLZ
528 Colima st.
La Jolla, Calif.

Since the beginning of time, man has solved for his particular period, means of rapid communication. Talking by means of signs without the tongue is called telegraphing. The word, "telegraph" is derived from two Greek words, which signify, "to write" and "at a distance".

Savages from the beginning conversed by signs, and early travelers in the west tell us it was not uncommon to see two of different tribes sitting on the ground opposite each other, conversing freely by means of signs. General Fremont on his way to California mentions in his writings, whenever he travelled through Indian country, he noticed scattered at intervals on mountain tops, columns of smoke which were Indian signals of a communication to various groups, telling them there were strangers in the land.

For purposes of war in all historic times with more or less ingenuity, bells, torches, flags and symbols have been used for telegraphing information from the earlist known periods. The Bible mentions in the 6th chapter of Jeremiah: "O, ye children of Benjamin, gather to flee out of the midst of Jerusalem, and blow the trumpet in Tekoa , and set up a SIGN of fire in Bethacarem."

The Egyptians had signals to indicate the rank of important officers, likewise the Greeks. By using these emblems on banners and signs in a manner understood by the various companies of soldiers, the standard bearers were enabled to telegraph such orders as "advance" and "retreat". These standard bearers I expect were our first operators and had to learn their own codes of signals to control military manoeuvres for their commanders. This direction of forces is not apparent or

given much thought now, but in those days it was a complicated set of signals which won battles.

Beacon fires and torches were not only used by savages but in the times of the Romans, torches of various colors enabled the Roman Generals to send messages to their troops in the field.

The ancient Greeks even used two synchroized water clocks to send messages. Torches were used to calibrate the starting times just like we might use the NAA or WWV time signals today. Two parties of Greeks would have isochronous water clocks, ones which were calibrated together. Imagine one of these instruments placed on a mountain top and another on a distant hill. We now have a sending and receiving station. When a message was to be sent, the sender would hold up his torch and the receiving operator would set his water clock. As both clocks started to run down, the sender would hold up his torch at the various calibrated levels where the letters were writen and the receiver would copy them off every time he saw the torch. It did work and as water moved slowly it was not too difficult to keep in synchronization the two instruments. The British Army about the time of the Battle of Waterloo used a more refined simular system which operated the same way the Greek water clock method 2000 years before.

AEschylus, who lived 500 years before Christ, wrote an account of the fall of Troy, an event if it did occur tells of a telegraph operator who was statoned by the water clock to relay the news. His grumbling of the lonesome duty propped on his elbows was much the same as military operators today. He could not sing, or whistle, but must pay attention to signals and be alert on his monotonous post. He might at last see the far off signal, light his torch and relay the joyous tidings about the wall of Troy to the next station. These methods were used for centuries before improvement. In 1455 the Scotch Parliament passed a directive that one bale or faggot burnt at a sending station should be a warning that the English were advancing on Edinburg. Two bales blazing side by side meant that they were coming in great force.

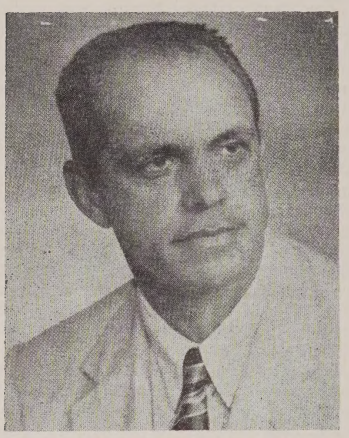
You can imagine as many times as England was invaded by the Northmen, consideration to perfect a warning signal system had top priority. Many towns in England still retain the names of these signal stations long forgotten by the towns people today. For instance, Ingleborough literaly means signal or fire borough, Beaconsfield is another name from ancient usage, and Scout Star Hill in the Shetland Islands.

The flash system of using two torches was invented rather recently in the last century by an English Rev. James Bremner. This was used by alternating and exhibiting and concealing one torch much as the boy scouts do with their signal flag. This flash system was later modified and used by the British Navy and Army in the field at night to send messages nearly as fast as a man could write. Ships later used lanterns in place of torches and increased the range by watching with looking glasses. This led to the invention of the heliograph or reflecting mirror which was used in the Afgan wars in Northern India where messages were sent 100 miles at 8 wpm.

Macaulay in his poems tells of messages which were sent from the south coast of England when the Spanish Armada was sighted, to towns throughout the length and breadth of England.

During our own Revolutionary war, many methods of signalling were used. One mast with a tub or barrel on top, a moveable flag on one side, a basket on a bracket near the top. By moving the flag and basket up and down, various signals could be sent. About 50 signals could be given by this method. The Chappe brothers had a system of 192 messages which could be sent by various configurations of wood exposed during the year 1797. By 1793 the British Government had adopted their system and was relaying messages from London to Paris. This same system was later adopted in Denmark in 1802. Other networks were built between Alexandria and Cairo, Egypt. A line of towers was also constructed from the German frontier to St. Petersburg in Russia embracing 220 stations and manned by 1320 operators. This system was developed and used until the invention of the telegraph which went into practical operation during 1837.

SAN DIEGO ZERO BEAT



Dr. Mark Pooles OQ5FN

Mark and another fellow airlifted an estimated 150 persons to safe areas in the Congo using a light plane. OQ5FN has been a medical missionary for 24 years all in the Congo. He learned to fly in 1940. In mid July the radio operators at the mission station Eric Bolton OQ5JW and Dave McLean OQ5CJ began getting reports of missionaries and their familes ambushed and threatened by bands of the Congo Army mutineers. The White foreigners at Luluabourg took refuge in a hotel with only a few rifles for defense. Soon as the Belgian paratroops captured the airstrip, Dr. Poole was able to use his plane taking three passengers at a time. He made 26 flights mostly in 100 mile hops, without sleep and only milk for food. While the Belgain paratroops have benn criticized, Mark speaking only for himself said, "They were completely justified in his opinion". The landing was absolutely essential to save hundreds of people from massacre. The radio communications was AMATEUR RADIO.

Ed. Marriner W6BLZ
528 Colima St.
La Jolla, California

"Europeans trapped in the Congo, tribesmen beseige villages" — so go the headlines. Behind the headlines amateur radio is playing one of the most important life saving operations in its lifetime, a source of real heroes.

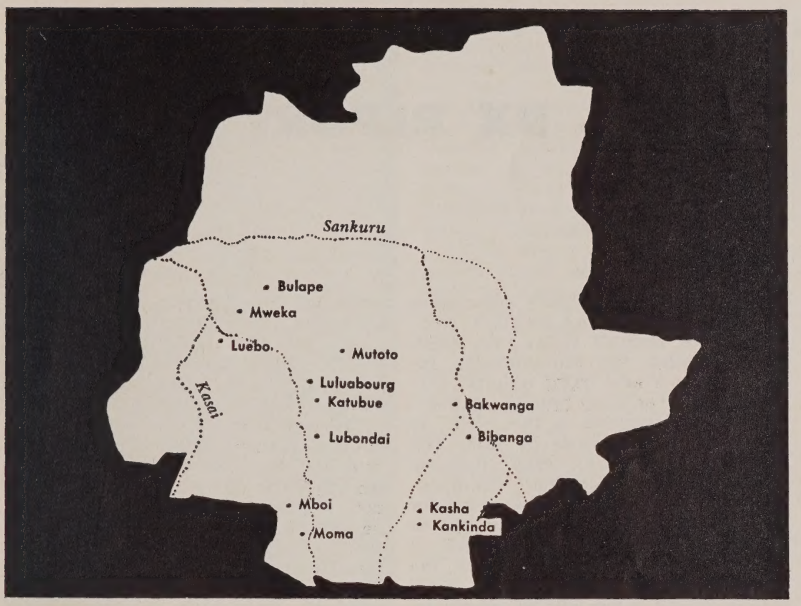
Just what is going on in the Congo and what is happening to the amateurs? The pieces of the puzzle come together after dozens of letters of inquiry.

Apparently each Missionary Net in the Congo operates independent of each other so they don't really know what the other is doing. Perhaps in times of emergency there should be some way to get the nets tied together to help each other in times of need. This information is gathered from the "World Mission Net" and the "United Christian Missionary Society." Who the other stations belong to I could never find out. One thing stands out for certain, amateur radio played a very important part after the Independence Day riot in the Congo. Here are some of the stories:

Bill Rule 9Q5DQ forwards this information. Amateur Radio was a real live story in the Congo. Governmental control and public communications broke down in a hurry, so rapidly in fact after June 30th, that many missionaries and other Europeans and Americans far in the interior of the jungle found themselves isolated with amateur radio their only means of communications with the outside world.

If it had not been for the amateurs there would certainly have been unwise and hopeless movements of peoples with resultant loss of life.

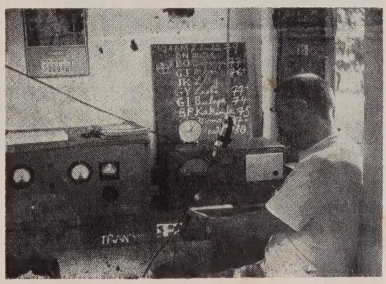
In the Kasai Province the amateur radio operators were real heroes in every sense of the word. Just after Independence Day, Lach Vass OQ5EC put



Locations of the Missionary Amateur Radio Stations in the Congo: OQ4GI, Bulape; OQ4GY; Luebo; OQ5FN and OQ5EI, Bulape; OQ5EC, Luluabourg; OQ5FO, Katube; OQ5BW, Moma; OQ5DG, Lubondai; OQ4BO, Bibanga.

out the first distress call from Luluabourg which resulted in Belgian paratroopers dropping into the city and liberating the airport. During the dark days following the 8th, Eric Bolton OQ5JW and Dave McLean OQ5CJ worked back to back 18 hours a day on numerous frequencies contacting mission stations, American Consulates and DX relays. Eric was the official contact for the Kasai province with the Belgian Government in Brussels, they having lost all other contact with the interior. This in itself speaks for our hobby, what excitement. OQ5AU, Frank Vandegrift worked two 15 hour stretches of continuous radio activity separated only by one or two hours of sleep. It was he that made contact with the American Air Force Base in Italy and Morocco that may have been instrumental in bringing American planes to evacuate our citizens at the strategic

Continued on page 24



Amateur Radio Station OQ4BN Located At Mutoto, Congo. This is one of the World Missions Net which keep schedules twice a day. These stations keep the 167 missionaries informed of news. These 12 stations helped evacuate 100 missionaries in two light planes by keeping radio contact for pick ups. Operator in photo is Mr. T.T. Stixrud.

DX REPORT

Jack Clement W6NTR
6612 Andasol Ave.
Van Nuys, California

As a result of K6CQM's submission of a QSL from UA2KAA for DXCC credit (see last month's WRA), the ARRL has recognized the Kaliningradsk region (UA2) as new DXCC country. Formerly a part of East Prussia, Kaliningradsk was assigned to the USSR by the Potsdam Conference in 1945. The largest cities are Kaliningrad, (formerly Konigsberg), Sovetsk and Chernyakhovsk. DXCC credit will be given for contacts after Nov. 15, 1945 and will be acceptable for DXCC credit March 1, 1960. As previously noted in WRA, the Mali Federation is defunct and DXCC credits for the same will be automatically credited to either the Mali Republic or the Senegal Republic, whichever is appropriate. These republics replace the Mali Federation in the DXCC listings as of June 20, 1960 or later.

Latest dope on the Malpelo Island Dxpedition, as heard on the air, is as follows: The expedition is spearheaded by HK3LX, HK5BZ and HK5EV; and they have invited W9DUB, W9EVI, W4DQS and W6HAW to participate in this activity with them. They will leave Bueneventura, Colombia, on or about the 16th of January and will operate from Malpelo Island for at least a 3-day period, using 3 rigs on cw, SSB and am. Frequencies for cw will be 40kc up from the low end of each band (10 thru 80 meters). They feel that the knowledge gained from the first trip can help them to overcome the difficulties of such a tough undertaking. The "go/no go" status of a dxpedition is subject to change for any number of reasons, but at the moment (Dec. 20th), prospects look very good.

DX Conference

The 12th annual DX Conference sponsored by the Northern California DX Club and the Southern California DX Club , with this years' host being the NCDXC will be held at the Hotel California in Fresno, Calif. Saturday and Sunday January 21-22, 1961.

The conference is open to all Northern and Southern Calif. DX Club members and their DX guests. Registration fee of $8.00 includes Banquet, Breakfast, Taxes and Tips. Open house will be sponsored by W6TT and W6DUB, Elmar Electronics in suite 515-516-517-518. Pre-registration prize is an Eimac 4-400A, and pre-registration closes January 15, 1961. Send all checks with call, name and address to Horace R. Greer W6TI, General Chairman, P.O. Box 75, Oakland, Calif.

What Cooks Dept.

As this is written, ZS6IF/9 is batting out contest-style QSO's from Bechuanaland, and W4BPD has concluded a short stand from 601AA and is now signing FL9 from Fr. Somaliland. Activity from most of the new African nations seems to be on the upgrade with the exception of Dahomey, Niger and Voltaic Republics. I have not heard any of these countries and have had no reports from anyone who has. Condx from the 12th of November to the end of the month have been exceptionally poor; more

L to R: W6BVM, W6EFV and W6FOZ. (W6TXL photo)

The station of Wally Hagestad, W7ENW. Wally is a member of the Willamette Valley DX Club, and one of the top W7 DX men. His compact rig (a Pacemaker driving 810s in the final, with an SX101 receiver) has accounted for 200-plus countries. Wally is a member of the American Institute of Architects.

about that later.

PY1BEO is set to operate soon from Trinidade, signing PYONF. (NEDXA)

BY1PK (China) is heard often at 1800 gmt on 14080, but he passes up W/K callers in favor of iron curtain hams.

As noted in the May 31st issue of "WRA", VU2NR is all set for a DXpedition to the Laccadive Islands (VU4), probably late in January. From the WGDXC Bulletin comes word that some cash is still needed for this operation. Contributions should go to Walter (W3RIS) who personally guarantees a refund if the deal should not come off.

W6PUY reports contacting FQ8HP and HJ both in the Congo Republic; and with 9U5MC (14040), CR5AE (14012), ZL3VH/3 (Chatham) (14012 and FF8AC, who gave no QTH but said his name was "Fox". Gene says his beam heading was ok, but he is a bit suspicious of him since Yvon Rangin has held this FF8AC call for many years and presumably still does, tho he is at present in France.

ZL4JF worked W1IJB (NH), W1WDD (RI) and W1ELR (VT) in just a few minutes, leaving only a few states needed for WAS. Ian returned to New Zealand early in November, leaving Campbell Island without ham representation. (W1ELR)

VK3CX was QSO with VU2RM when AC5PN broke in calling VU2RM, who answered Chhawna and told him that VK3CX was on the frequency. At the same time W3CRA called AC5PN and raised him, but since Alan (VK3CX) already has AC5PN's QSL, nobody got hurt!! Alan says that he o[illegible] AC5PN around 1130-1230gmt on 14065, which is much too early for the West Coast. Howzabout some of you silver-tongued persuaders writing Chhawna with the request that he get on around 1530-1630 gmt? (VK3CX)

XW8 (Laos) is on the FCC banned list again; joining Indonesia, Viet Nam and Cambodia in that forbidden (for W/K) category.

The FM8QW on cw was evidently a pirate, as the real FM8QW reportedly works only phone.

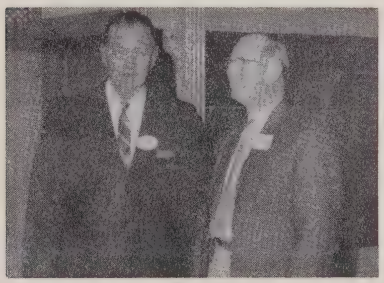
Ray Baty, who many of us worked as VR3A is now VK9ANB on Norfolk Island. He will be there for 2 years. (VK3CX)

Kay Gaynor (K2UKQ), in a little more than 3 years, has chalked up an impressive record on cw. DXCC 210-plus, WAZ, 1st cw WPX to a YL, TOPS, CHC, AHC, etc; and the 1st to earn the HTH award. Most of these honors were achieved with dipole antennas, tho it took a new quad to raise zone 39 for WAZ. Her receiver is an HQ170 and xmtr is a Valiant running 150 watts. Kay's daughter Nora (K2OJO) is the xyl of Dick (W2IMU).

Clarification on the British Camaroons status is contained in a letter from ZD2JKO which was published in the Northeastern DX Assoc. "Bulletin" ..... "On Feb. 11th there will be a plebiscite when the British Camaroons will decide whether it will join Nigeria or the Republic of Camaroons (FE8). It has no other choice. It cannot remain a separate country after this vote." NEDXA Editor W2DGW comments, "Since the ARRL has indicated that the British Camaroons would count as a new one and since it is now obvious that the country will exist only until Feb. 11th, a contact with this spot would be a prize treasure." ZD2JKO goes on to say that ZD2KHK is the only one likely to be heard in the Br. Camaroons but he cannot use his ZD2 license there and has written to the foreign office in London requesting a license. He has a transmitter and receiver all set up and waiting in Mubi, British Camaroons, and if the license is forthcoming he will be off and running. As yet, no dope on the prefix for the Br. Camaroons.

DX Chatter Dept.

A world wide magentic storm, the worst in the last 10 years, disrupted short wave communications from Nov. 12th to 18th, with hangovers from this same storm still lousing up the HF bands as late as Nov. 26th. James Weldon head of the World Warning Service of the National Bureau of Standards, said in the Los Angeles "Examiner" that the storm reached a peak of 268 on the "A" scale which is used to rate the severity. The "A" figure is one which rises in value with the increasing degree of magnetic disturbance. An "A" of less than 5 is quiet (very good condx). "A"s of 5 to 20 are fairly good condx, while "A's" greater than 25 are definitely disturbed, and "A" figures higher than 50 are major magnetic storms. Incidentally,, you can receive these CRPL Radio forecasts each week by airmail, for free. Just write to CRPL Radio Warning Service, U.S. Bureau of Standards, Boulder, Colorado. Ask to be put on the CRPL Radio Warning Service postcard mailing list. Each airmail card you will receive lists the "A" values for each day of the previous week together with the forecast for the current week. In addition you will receivve special warnings of unusual sunspot outbursts or flares which indicate the probability of future magnetic storms.



L to R: Yours truly and W6ATO. Dick and I both received our WAZ certificates in October 1950. (W6TXL photo)

Dxers will be saddened to learn of the passing of W8YIN, Mickey Unger, into the ranks of the Silent Keys. One of the top QRP dx men, Mickey was a frequent contributor to this column, and was the DX Editor of "Sideband" magazine.

The following from W1BB's fine 160 meter bulletin: "The annual Transatlantic and Worldwide Top-band 160 meter DX test will be held this season on the following Sunday mornings: (from 0500 to 0730 gmt) Jan. 22nd, Feb. 5th and Feb. 19th. During these periods special efforts will be made to contact European, Asian, African and other 160 meter dx stations thruout the world, making observations contributing to the study of propagation conditions on these frequencies."

Dxpeditions are not always the "ball" they are cracked up to be. Two of the most capably manned and carefully planned dxotic excursions of the past year have had to take it on the chin and return home empty handed. The first was the Malpelo trip which was stymied by sheer cliffs which denied all attempts at a landing. The most recent was the W4BPD, WOAIW, WOUQV sortie; their Indian Ocean island -to-island plans being upset by very high seas which forced them to return to the Seychelles and thence home. Reports say that the Malpelo Island operation will be reactivated about the middle of January by W6HAW and others. I have a hunch that this time they will be successful:

Sidelights on Sideband

Lester A. Earnshaw, ZL1AAX
Box 51, Warkworth, New Zealand

A Sideband Demodulator

The balanced modulator is to sideband what the crystal is to the crystal set. It's purpose is twofold: It mixes one signal with another to produce a third and/or fourth and at the same time it prevents one or both of the original signals from appearing in the output. Take the balanced modulator used in the sideband exciter. In this, audio is mixed with an RF carrier producing our third and fourth components, the sidebands. The original carrier is "balanced out" and the audio is either balanced out also or removed by suitable filter components.

For many years telephone people have used the balanced modulator. They have used it much in the manner described above and also to convert high frequency signals back to audio. This they term demodulate. The balanced demodulator is the exact opposite of the balanced modulator and circuitry is more or less identical. Of course a product detector is really a demodulator but we separate the terms just to make things more confusing. If it comes to a point they are all mixers! It is the diode type of balanced demodulator I propose to discuss.

Diodes Versus Tubes

But why diodes? What's wrong with the present product detectors? The answer to the latter question is just one word: Nothing. The answer to the former question will throw new light on the second. Diode demodulators invariably require low impedance inputs, high BFO voltages and have low impedance outputs which, in most cases, make them at loggerheads with tube circuitry. It is emphasized that diode demodulators may be constructed with high impedance input and output terminations but these usually require center tapped and bifiliar wound transformers to hold the stray capacities at balance. Convenience as much as anything has therefore probably prompted ch widespread use of the product detector. However, the advent of transistors has presented us with a need for lid state detectors and when you think about it the low impedance demodulators are a logical choice at least worthy of investigation.

The Balanced Demodulator

Of the many demodulator circuits investigated the shunt modulator offered most promise. This circuit has the advantage of not requiring tapped transformers of any kind and will fit in with generally available components. In addition, the circuitry is ridiculously simple and requires but few components. Output is sufficient to drive the usual two tube or three transisttor audio am-

Fig. 1

plifiers. (6AV6, 6AQ5 for example). Quite unexpectedly, the detector proved excellent for use with the tube receiver and in fact, right at this moment it is functioning in the usual station tube receiver which is tuned to the 20 meter band and I'll defy anyone to tell the difference from the 12AT7 which it replaced. It is necessary, however, to use a step up audio transformer of around 6/1 ratio when the following audio amplifier is tube. The detector will accept the full output from the last IF of a two stage IF amplifier without need for a capacitive voltage divider. A transistor IF transformer is necessary to obtain the correct impedance match.

The Circuit

Looking at fig. 1, it will be seen that the demodulator is nothing more than an adaption of the well known shunt quad. The original circuit used four diodes but these have now been whittled down to two. The two diodes are approximatly matched by comparing their forward resistance on an ohmmeter. Consider the detector when steady signal is fed to the diodes from the IF transformer. One side of the link winding on IFT will be positive when the other is negative. The diodes D1 and D2 will therefore conduct on one-half cycle, rsulting current flow from A through the resistive load will be in opposition and will therefore cancel. On the other half cycle the diodes will be reverse biased and will not conduct. The above conditions will hold true just as long as the diodes are balanced and one current exactly balances the other. However, when the BFO is switched on, first one diode is forward biased and then the other; the balance is upset and a current flow from A will take place.

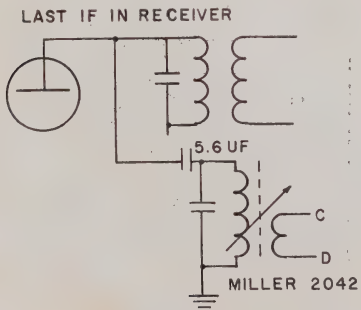


Fig 2 Connection to Receiver

This current is the difference between the incoming signal and the BFO. Like the product detector, when the BFO is turned off there is no output.

The capacitor CI serves to remove the RF component from point A and is necessarily large because the impedance of the circuit is low — between 500 and 1,000 ohms. This impedance offers an almost perfect match to the base of a transistor without need of a transformer. To match to a tube amplifier the detector should be followed by a 6/1 step up transformer. An ARC5 receiver output transformer is ideal. The transformer is not critical and a 3/1 may be pressed into service with some drop in output.

The dotted resistor in the output is absolutely necessary. It may be the gain control of the audio amplifier or the primary of the transformer. Its purpose is to provide a DC path for the audio signal.

About The BFO

As may be seen in fig. 1, there is much more to the BFO than there is to the demodulator. When a transistor BFO is used it is found necessary to use an isolation amplifier to prevent FM modulation by the signal voltage. Although it is possible to feed the detector directly from a tap on the BFO coil it is then necessary to hold the input from the receiver to a low value. It was not found necessary to use an isolation stage between a tube BFO (a pentode with the output taken from the plate circuit). In the latter a transistor transformer may be connected in the plate circuit and the output taken from the secondary or alternatively an RF choke may be connected between point B and ground and point B capacity coupled to the BFO. As the demodulator requires only around 1 volt of BFO voltage there is no hardship to this one.

Coupling to the Receiver

The primary of IFT was coupled to the last IF stage of the receiver through a 5.6 mmf capacitor. See fig. 2. RF at the secondary of the transformer did not exceed .25 volts A larger signal here will require a larger BFO voltage the ratio being held to at least 5 to 1

It is interesting to note that although a BFO harmonic falls in the 80 meter band no trace of it may be found in the receiver. And this is inded a significant fact for there is nothing more difficult to erradicate than a BFO harmonic in the receiver tuning range.

VHF RECORD

ROBERT D. GRIMM, K6RNQ
2800 Monticello Ave.
Oakland 19, Calif.

Solar activity is decreasing and 50 mc. F2 openings are following it right down the ladder. While there have been a few F2 openings, they are a far cry from the openings experienced by 50 mc. operators during the Winters of 1956, 1957 and 1958. The only East-West F2 openings reported this year were into KH6. The remainder of the F2 openings were all on North-South paths.
of such things: the current level of sun-
For those that like to keep a record spot activity is reported to be on a par with the Winter of 1949.

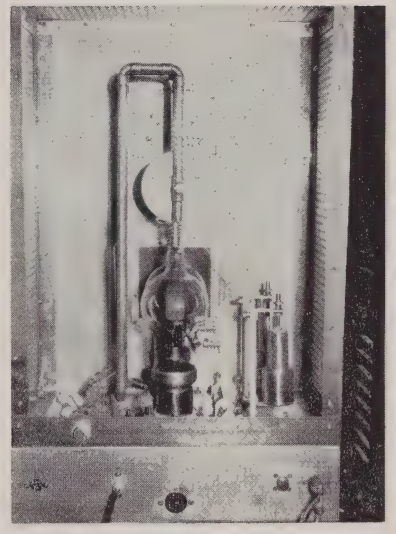
50 MC.

Oct. 10-W6BJI worked W7INX on Aurora at 1717 PST. At 2015 PST K6GOX QSO'ed K7BDU. Gib, W6BJI, says these were the strongest Aurora sigs he has ever heard.

Oct. 25-K6HGR/KH6 was worked by K6DOQ, K6YIL and K6OHM at 1230 PST. K6HGR/KH6 is reported to have also QSO'ed a Florida and a Nevada station at this time. The opening lasted about 45 minutes.

Nov. 16-K6GOX and W6BJI reported working LU9MA, Mendoza, Argentina, around 1400 PST.

JA2YF. Photo via K6PXT



Six meter final of K6QXY. Those jugs are 45OTH's.

Nov. 25-Widespread Es between Texas, Ariz. and Calif. W5's reported to have worked into KH6 about 1800 PST. We'd like to have a confirmation on this report by one of the 5's or KH6's involved. An opening to KH6 at this time of the day is a bit unusual and it would be interesting to determine if the propagation were double-hop Es or F2.

144 MC.

W4RFR, Nashville, Tenn., reports what is probaly the first two meter meteor scatter QSO utilizing SSB. On October 21st he QSO'ed KILSY, Boston Mass., at 1253 CST. They had been trying since August and had received many readable bursts during this time.

Continued on page 22

RANDOM RADIATION

Howard Pyle "YB" W7OE
3434 74th Ave S.E.
Mercer Island, Washington

First, let me say "thank you". The response to my suggestion (built up from the suggestions of others) that we attempt some effort to publish in one form or other, and eventually as a book, a historical record of West Coast amateur radio activities, has been splendid. It very well appears that a publication of this kind is eagerly desired, not only by the "old-timers" of West Coast hamdom but a large number of newcomers as well. In fact, my mail has been so heavy since the article "DO YOU WANT HISTORY" appeared in the July issue of WRA, that I've been forced to run a flock of answers on the hectograph machine; they just outdid my facilities and time to answers each one individually! Don't feel hurt; it's one of the penalties which go with writing.

First to come through (on the same day on which I received my copy of WRA) was Ed Marriner, W6BLZ. Seems like Ed has been a year or more doing research in connection with a book which he expects to publish before too long and which will deal exclusively with early West Coast commercial wireless; no amateur activity to be included. What a co-operative co-incidence! I've proposed doing such a book restricted entirely to the pioneer hams of the West Coast! Ed has a wealth of information on the ham angle; I have a considerable amount of data on the early commercial end! We are in a swell position to 'swap' and the resultant output, in two books, should just about give posterity what we know, can remember and can dig up in connection with the covered wagon days of West Coast wireless, both commercial and ham!

To the many others who have written, thanks a million; I've found out more about obscure and hazy data on pioneer West Coast ham activities already, than I thought existed! Just keep the mail coming, fellers and gals; it is most enlightening and I'm very sure that it will make a good book eventually.

Beyond that, I don't have much of anything exciting to offer in this colum this month. I have noted that since the advent of colder weather and the additions, that on-the-air ham activity has taken a sharper up-turn. This is, of course, a customary seasonal condition. When you can't go out, you stay home; when you stay home you can "eat, read and sleep" but you can't do all of them all of the time. That's where the ham comes into his own . A non-ham can't golf on a snowy, soggy course; he has to bundle up in his woolies to go bowling; sail-boating is definitely out . . . what to do? But the ham; a-a-ah! Comfortably ensconced in an easy chair (well, we hope!) he can lean forward a little bit and punch his key, or he can lay back and relax with microphone in hand and visit with the world from his comfortable steam . . . oil . . . electrically heated shack! And, if the XYL peers dubious askance through the upper half of her bifocals, he need not brush the moss and lint from is Tuxedo and take her to a night-club (b-r-r-r-r; it's snowing outdoors!)! Merely invite her to sit on his knee, grasp the mike firmly, although maybe gingerly, in her delicate little paw, and swap cookie recipes with Gertie, maybe a thousand miles away!

And me? You should ask! I doubt if

Continued on page 26

with the YOUNG LADIES

Jean Kincheloe K6OQD
6625 N. Brightview Dr.
Glendora, California

Well, what can I talk about this month? I'm sitting here staring into the flames of the fire burning in the fireplace. Its cold outside; well, to us here in Southern California, 50 degrees is cold! You may have noticed that the date on the inside cover of this magazine is August 31, 1960. I am writing this three weeks before Christmas; you are reading it AFTER Christmas. Now, can you see where column-writing can sometimes present problems?

Since you are probably reading this sometime shortly after New Years, I guess the first order of business will be to congratulate the 1960 YLRL officers for a job well done and wish the best of luck to the 1961 officers.

A lot has been accomplished in YLRL this year under the able direction of President, Gladys, W6DXI. About the most important of these was the incorporation of YLRL as a non-profit organization. Another important step was the establishment of the position of Property Custodian. This is a sort of "Assistant Treasurer" and from where I sit, was a most excellent idea, hi! Her job is to handle the stocking of YLRL stationary, pins and printers' cuts and filling orders for same. Ginny has done a most excellent job this past year and is to be highly commended. Also a bouquet to her OM, Kirk, for his helpful contribution.

The Third YLRL International Convention was held in Cambridge, Mass. with the WRONE doing a marvelous job as hostess club of the convention. Not only did they return the $100. which YLRL loaned them to get the ball rolling, but they donated $150. to YLRL to go into a special account to be used to help future YLRL presidents attend a YLRL International Convention in her year as President. Complete details may be found in the Nov.-Dec. issue of YL Harmonics. I just wanted to mention it here for the benefit of non-YLRL people. I think it shows excellent management by the WRONE and they are to be most heartily commended for their generosity and loyality to YLRL.

The original Old Quacking Duck having a ball after a recent deluge at Glendora, Calif.

The San Diego YL Club is busy making plans for the Third Annual California YL Hamfest. So far all that is known is that at will be held in May, 1961; it will be held at the El Cortez Hotel in San Diego; there will be a station set up in the lobby. So start stuffing your piggy banks, gals. I certainly do hope that some of you out-of-state gals and those from the northern part of California will be able to make it.

SHOM Certificates number 38 through 41 go to: WA6CCR, W4LOX, K4JIG and K7CZQ. Sticker no. 4 goes to K4PPX.

Continued on page 26

EARPHONE IMPEDANCE MATCHING

By M. C. SMITH, W6GMC

A few years ago the usual procedure for receiver manufacturers was to bring the earphone output from the plate of an audio driver tube or from the grid side of the driver transformer breaking the input to the output tube to silence the speaker when the phone plug was inserted. In order to get the best sensitivity and thus output to the phones, a high impedance earphone gave the best results as it more nearly matched the plate impedance of either the driver tubes plate or the grid side of the driver transformer. Hence, Trimm featherweights of 24,000 ohms gave the best results. Or the Trimm Commercials of around 20 000 ohms impedance gave about as good results.

What happens now when these phones are inserted into a receiver that has its earphone output from the output transformer on the same impedance as the PM dynamic speaker such as the 75A4 and the new HQ180? They work but the audio gain has to be advanced to well near the wide open point. If there is any residual hum in the set this will appear as objectionable noise in the "cans". This objectionable situation can be overcome by the use of either the 'hi-fi" earphones which have an impedance around 600 ohms which are designated ANB-H-I on the earpieces. An even better set of cans is the TH-37 300Z made by a number of different manufacturers and available on surplus (new) for $2.95 or thereabouts. You will probably have to take the diaphragms out and rub them down with steel wool as they will no doubt have considerable corrosion. The rest of the earphone seems in good condition provided they are new surplus. The use of these types of "cans" allows the audio gain to be operated at around 30 percent open and consequently set noise is reduced considerably.

There is another type of earphone on the surplus market which has found wide acceptance with amateurs. It is known as type R-14 which has an impedance of 8000 ohms. This gives fairly good performance in a high impedance output circuit but not quite as good as the Trimm Commercials or Specials. In order for these type R-14 "cans" to give the best account of themselves, you should resort to impedance matching by the use of some of the new transistor output transformers now available. Here at W6GMC a Stancor TA-33 is used in a reverse fashion. The secondary 8 ohm tap is used to plug into the earphone output. The primary winding has an impedance of 10,000 ohms which is almost perfect. There was little to choose from between the 4 ohm tap on the secondary and the 8 ohm tap except that the signal to noise ratio is slightly better on the 8 ohm tap. In order to use my Trimm Commercials, I use an Argonne AR 130 which has a primary impedance of 20,000 ohms and a secondary impedance of 8 ohms. This transformer carries a catalog number of 60AO75 in the 1960 World Radio Lab catalog. Here again an almost perfect impedance match can be obtained, allowing the audio gain of the set to be operated in the lower portion.

ROYAL ORDER OF HOOT OWLS

As you know, ham radio covers many fields, all the way from radio control of model planes and boats to woodworking and the building of super duper sound chambers for hi-fi.

In my travels among the ham gang, I ran across a most unusual fellow. Jim Collier is well known throughout the Northwest "Big Car" auto racing circuit as a builder, designer, and auto machinist. He makes his living as a telephone installer for our local telephone company.

Jim is also an accomplished organist, and the photos are of Jim's first love, a beautiful old pipe organ. The console and pipes of this beautiful instrument were made in 1924 by the Kimball Organ Company for the old Capitol Theatre in Seattle, Washington. In 1937 the Palamar Theatre needing a larger organ bought it at a cost of nearly $50,000 installed, including the 10 horsepower blower.

Up until October of last year the organ was just a ghost with its pipes, drums, chimes and other beautiful sound effects just gathering dust. Jim bought the old organ for $800., and with help of his many friends removed the organ piece by piece during non-movie hours. The console was mounted in an elevator pit and stood in three feet of water.

Jim is an accomplished organist. Here he is at the console of the beautiful old Kimball organ which he is restoring in his garage workshop.

It took Jim 29 days of air pipe fitting, wiring and tuning to bring this huge monster back to life. Jim still has many more months of installation and building to do, but at the time of the photos he has over 800 pipes at the command of his finger tips.

Continued on page 28

Console and Ivory's of the once dead Kimball pipe organ

Just a few of the organ pipes of the Kimball Organ

NEW BOOKS AND LITERATURE

Conducted by - -
Charles Caringella, W6NJV

There are many books being published and we will bring to your attention the ones we feel will be of interest in the field of radio and electronics. The Government Printing Office publishes many outstanding books and we will try to list at least one of these each month. In addition, the latest manufactures' catalogs will be listed including complete information on how and where to get them.

We would like to extend a general invitation to all publishers and manufacturers who would like to have their material reviewed in this column. Review copies may be sent to Western Radio Amateur or to W6NJV, Box 1025, Ontario Calif.

73's, Chuck, W6NJV

HAM TEST EQUIPMENT

"101 WAYS TO USE YOUR HAM TEST EQUIPMENT" by Robert G. Middleton. Published by Howard W. Sams &Co., Inc., Indianapolis, Ind. 168 pages. Price $2.50.

This new book should be a valuable aid to the amateur who likes to "brew his own" or those who want to repair amateur radio equipment. Author Middleton lists the equipment needed for each test described, the connections required, the test procedure, and information on the evaluation of results. Applications are given for the following pieces of equipment: grid-dip meters, antenna impedance meters, VOM and VTVM's, oscilloscopes, reflected- power and SWR meters, bridges, and simple noise meters. A well written book, easy to understand, and a must for every ham shack.

MOBILE RADIO

"TWO-WAY MOBILE RADIO HANDBOOK" by Jack Melmi. Published by Howard W. Sams & Co., Inc., Indianapolis, Ind. 208 pages. Price $3.95.

More than one million vehicles are equipped with two-way radiotelephones. This relatively untapped service field represents a golden opportunity for the alert service technician. The author's easy-to-understand instructions provide a comprehensive treatment of this mushrooming field. In ten clear chapters, the topics covered are: basic systems, types of receivers available, transmitters, control systems, antenna systems, power, and servicing of mobile radios. Pointers for setting up a service shop are also included.

GOVERNMENT PUBLICATIONS

"BASIC ELECTRONICS" by the Bureau of Naval Personnel. Published by the U. S. Government Printing Office and available from that office through the DIVISION OF PUBLIC DOCUMENTS, Washington 25, D. C. 728 pages. Price $2.25.

This book was orginally written as a Navy training course. An excellent book for the beginner in electronics. It begins with the application of tuned circuits, discusses the operating principles of vacuum tubes and their action in power supplies, amplifiers, and oscillators; modulation and detection; transmitters; receivers; antennas; and radio wave propagation. The book concludes with a discussion of test equipment.

When ordering this book, use Catalog No. D208.11: EL 2/10/955.

Continued on page 23

73 MAGAZINE

Three issues of this new ham magazine devoted to home brewing are now in print. Just take a look at some of the articles and see what you've been missing. Issue #1: Audio Booster, a three transistor amplifier that increases your modulation percentage without generating distortion, a completely new idea and invention; Using the Varicap for FM Modulation; Bantam Converters, two tube VHF converters for 50-108-144-152-220 mc; Tubeless Electronic Key; Digest of Surplus; Direct Reading Capacity Meter; Phone patch etiquette; Three way power supply; New facts on electric shock that are very important; Propagation Charts for October; Three Tubes, Five Watts, Six Meters, a small rig; How To Be An Amateur by John Campbell W2ZGU; Testing the Heath GC-1A transistorized communications receiver; Modulation Fundamentals, a technical article. Every article in the issue received some first place votes in the readers poll. There were 46 pages of articles compared to 37 in Brand X and 26 in Brand Y for the same month.

The second issue had another bunch of interesting construction articles: Transistorized 10M Converter; Four Band Crystal Converter using the new International Crystal units; FM-VFO Exciter for 6 & 2; High Power in the mobile; Building transistor circuits on Cardboard Chassis; a complete technical article on noise limiters that will have you installing the new Trough Limiter in your receiver; An overlay for the 'scope to Measure Your Modulation percentage; Hard Facts About Echo, or why you haven't gotten back a bounce from it yet; a new front end tube for the Communicator that will greatly improve it: VHF Tri-Mode Receiver, endsville in VHF receivers; Toroid Coils; $5 Frequency Counter, 0-300 cps, 1kc, 3 kc, 10 kc, 30 kc.; 20 Meter compacted dipole; Propagation Forcasts for November; Equipment Manuals, an article which will make some manufacturers writhe; Finding True North for aiming your beam. 38 pages of technical and construction articles this month compared to 33 for Brand X and 35 for Brand Y, both with 184 total pages for the issue.

Issue #3 (December): Transistorized 220 mc Converter; a super sensitive R-F Sniffer; SSB Dynamic Demonstrator; a Capacity Meter; Station Control System; Multivbrator in VOX Circuits; Transistorizing tube circuits; Squelch systems technical article; Low Noise Two Meter Converter, the newest and hottest of the 417A jobs; Surplus Frequency Standard, a simple conversion of the VO-4 Oscillator; Simple Phone Patch; New Base Coil Forms; Vagabond Ham; etc.

Subscriptions are $3 per year, $5 for two years, and $4 per year for DX stations. Editor: Wayne Green W2NSD.

To 73 Magazine, 1379 East 15th Street, Brooklyn 30, New York

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Cover Story

SW Division Convention to be held in Phoenix, Arizona May 26, 1961

Mrs. Sydney Peebles of Phoenix, Arizona, K7NOJ, on her way to the fabulous Convention to be held in Phoenix on May 26, 1961. She has her Communicator in the English Governess Cart with her.

Of course we don't expect you to use this mode of transportation when you go to the Convention, but it's not too early to at least start making plans and getting your reservations in. Time slips by so fast, that it will be here before you know it.

The sponsors claim this will be the most fantastic convention ever held, and judging from their pre-registration prize, we don't doubt it. Imagine, a complete Johnson Viking Kilowatt, Ranger Exciter and Desk prepaid crating and shipping to your door. What a prize.

Pre-registration cost are only $8.50, and registration at the door is $10.00. Both include a scrumptious and elegant banquet in the Thunderbird Room of the Westward Ho Hotel. Man don't mess around. Put a Viking Kilowatt in your shack for only $8.50. There is no need to pay $10.00 when you can save time and trouble and money. Reservations can be made by writing to 1961 SW ARRL Convention. P.O. Box 7155, Phoenix, Arizona. Do it today.

Communicator II *(from page 3)*

a minimum. All grounds should be returned to a single point preferably at the oscillator socket.

If the oscillator is working then the next step is to procede to changing the I.F. transformers. When lifting the existing components remember that they will be returning to the same pin of the new transformer, therefore their dress should not be disturbed. After the new transformers have been installed the job is completed by injecting the local oscillator energy to the "new" mixer grid (pin 1 of VII) by means of a "gimmick," in this case a 2.2 mmf ceramic capacitor was used. The capacitor was soldered directly to pin 1 of VII and a short length of wire was soldered to the other end of the capacitor. The remaining wire end was then connected directly to pin 1 of the oscillator tube. It is important to keep this lead as short as possible to prevent coupling stray oscillator energy to the existing circuits.

To align the two new transformers it is only necessary to peak them for maximum output using either a station or existing background noise. No trouble was encountered during the conversion so the job can be tackled with complete confidence towards a successful conclusion. The resulting sharpness and somewhat greater gain then before the conversion will certainly make worthwhile the money and effort expended.

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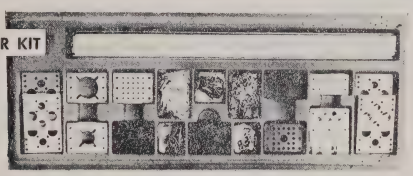

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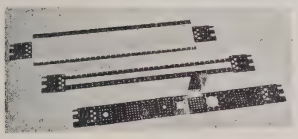

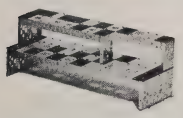

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Transmitter 14.95
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RIchmond 9-1179

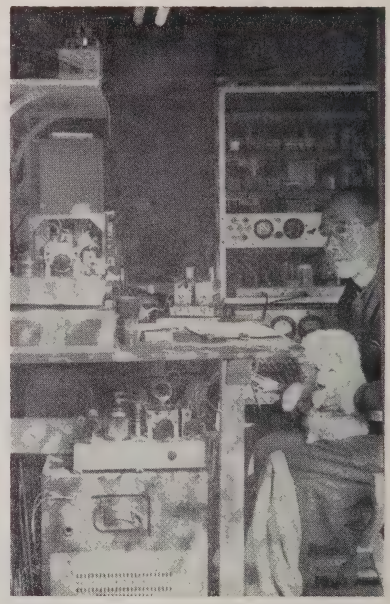
VHF Record *(from page 13)*

W4RFR runs 200 watts PEP to a 32 element collinear up 75 feet. He is interested in meteor scatter SSB skeds, on either 6 or 2 meters, with Western SSB stations.

September 26 and 27 saw good tropospheric conditions along the Eastern seaboard. At 2253 EST Sept. 26 W4RMU, Jacksonville, Fla., worked K4EUS in Richmond, Va. After that he worked; W2AMJ, W2QHZ, W2AZL, W1AZK and W2SJX. The opening peaked at 0028 Sept. 27 when W1AZK's sigs reached RST 549X. An attempt was made with W1RJA at 0150 but signals were not audible for sufficiently long periods to permit a QSO.

220 MC.

W4LIP, Miami, Fla., is now SSB on 220 with a 6360 linear. He plans a full kw. soon. W4LIP and K4IFI claim the first two way 220 SSB QSO in Florida.



JA6JY, Katsumi. 715B's final is under the table. 4X150A's on table, modified ARC-3 front end center of table. On the right is 50 and 144 mc exciter and modulator.

K6OGX, Fresno, now has 90 watts on 223.470 mc.

UHF

W6VSV, Berkeley, can lay claim to some sort of a QRP record. Bob currently has a crystal controlled rig on 432 that uses only two transistors and one diode. With a measured power output of 1 milliwatts (.0015 watt) he has worked stations up to 30 miles away.

1296 mc. interest is increasing in the Fresno area. Both K6GDI and W6TZJ are now on the air with converted APX-6's.

A PEEK AT THE LOG OF KL7FLC

8/17 2105-VE4TX
8/18 2155-KL7AUV
8/28 2020-VE4TX
8/29 2135-KL7AUV
8/30 2030-VE4TX, 2225-KL7DKN, 2240-KL7AUV, 2320-KL7DKN
9/2 1815-VE4TX
9/4 2045-W7EMX, 2055-W7RT, 2110-W7PQA, 2145-W7RDY, 2155-W7INX
9/5 1945-VE4TX, 1955-VE8BY, 2100-VE4TX, 2115-KL7AUV
9/6 2015-VE8BY, 2030-VE4TX
9/7 1850-VE8BY, 1910-VE8BY, 2300-KL7DKN
9/8 1815-W0GNS, 1850-VE4TX, 1940-VE8BY
9/11 2122-VE8BY
9/12 1815-VE8BY
9/13 1820-VE8BY
9/17 2100-VE8BY

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Books

(from page 18)

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NEW EICO CATALOG, available from ELECTRONIC INSTRUMENT CO., INC., 33-00 Northern Blvd., Long Island City 1, N. Y. This 28-page catalog covers ham equipment and radios. Kits and wired units are described. Copies are available directly from EICO. Say you saw it in Western Radio Amateur.

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6429 N. Glenwood Ave. Chicago 26, Illinois

Zero Beat *(from page 7)*

moment. Listening in on the U.S. side was Porter Orr W4AZD and K2UTC Dick Ebeling.

One of the fellows who missed the trouble was Rev. Frank McElroy Jr. OQ5EI. Frank had a heart attack and had to leave the Congo on June 2 as he saw the dark trouble ahead. By July 8th things really fell apart and conditions existed like they had in the beginning in 1895.

OQ5BW, Joe Spooner was in the thick of it and carried his rig with him and was credited with saving large groups of whites from dangerous places. Frank OQ5EI was sorry he became sick in a time of such need. Because of Frank's age he cannot return and can no longer pass the U.S. amateur requirements to help from this side and desires all who knew him to pass on to the 9Q5's his regards. Dr. Henry Nelson 9Q5FV and Dr. Sandy Marks stayed in the Congo.

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OQ5EI	OK4BM Lubondai
OQ5FN	OQ4BN Mutoto
OQ5AU	OQ4BO Bibanga
9Q5FV	OQ4GJ Mboi
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Dr. Sandy Marks call unknown.

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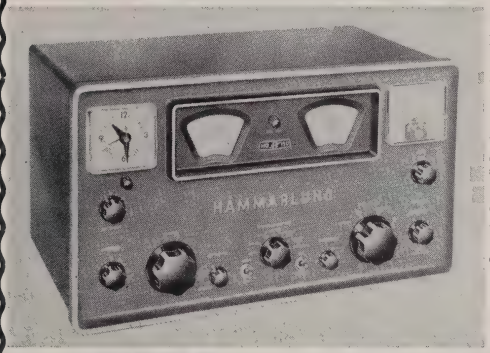

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Random Radiation *(from 14)*

I'll live to see the day when I can take ham radio that way, although I do get a wistful desire to at least try it some time! Nope; just too many things to do. When I was working for a living (I'm beginning to think I was cheating my employer!), I seemed to find a normal amount of time for hamming. Now that I've retired . . . time? There just ain't any! If I can average 2 hours a month on my CW traffic net and a couple more hours at odd times on general "hit-or-miss" hamming, I'm lucky! And I'm home and within petting reach of my ham shack just about all of my waking hours! Any of you other bald-headed grey-beards got any suggestions?

This Division of ARRL (the Northwestern), just came out of the throes of the election of a Director. Like the KENNEDY-NIXON deal, it took a razor blade to decide it! However, Rex Roberts, previous incumbent for several terms, apparently used a new blade; at any rate he outshaved his nearest competitor, Harold Johnston, W7PN, currently Vice-Director and a former Director, by a thin margin. So . . . Rex Roberts is once again "it" as Director of the Northwestern Division.

I'm off on a new tangent now . . . one of many which have occurred to me while writing this. Do you get that way too? You write something, or say something and all of a sudden you get three more 'somethings' chasing between your ears? Anyway, here goes for sumpin' else now and if it don't turn out, I'll blame it on two needles and four pills the doctor insited on forcing into my complaining body today! "73" you-all!

Young Ladies *(from page 15)*

Fran was the first YL to receive both certificate and sticker with all contacts on 6 meters. I am waiting most anxiously for the first application from an out-of-country application. I even have an extra-heavy mailing tube all reserved, hi! I am late getting these certificates out but I can only apologize and tell you that I have been snowed under with work lately and I shall get them all out as soon as possible. I have received applications for five more and they will go in the mail as soon as I can check them and get the certificate lettered. As each one arrives, I date it same as the date of receipt and that is the date they will carry on the certificate. Also, this keeps them in numerical order. It would facilitate processing these if you would arrange your list in CALL BOOK ORDER by the OM's call. I have a file that is arranged that way and when an application is received, you'd be surprised how much more quickly I can check it if it is in the same order as my file.

Hope you all had a very Merry Christmas and Happy New Year. Now, that is silly; I haven't even started my Christmas shopping yet, hi! Anyway, you get the general idea; me? I'm confused.

33
Jean

P.S.

Don't forget the 12th ANNUAL YL/OM CONTEST. Dates are as follows:

Phone: Sat. Feb. 15, 1961, 1300 EST to Sun Feb. 26, 1961, 2400 EST

CW: Sat., March 11, 1961, 1300 EST to Sun., March 12, 1961, 2400 EST

I shall print the complete rules in the next issue of WRA.

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Hootowls *(from page 17)*

Here and There with the Hootowls

Motto of the month: "Keep Smiling" It makes everyone wonder what you have been up to.

Our seventh annual Hootowl family picnic date has been set for June 18, (Fathers Day) so let's mark those calendars right now. As you know, the picnic is held in Seattle.

Our deepest regrets go to Gale, W7RDY upon the recent passing of his mother.

Many of the Hootowl gang were on hand for the first annual Evergreen Radio Society of Seattle "CQ" contest. Man was six meters stirred up.

I think poor old Gil, K9AMG was scared out of Seattle his last visit. Anyway Gil, we found water in the gas tank, and thanks for the gallon of gas.

Remember please, those of you who are active in R. O. H. O. nominations. Please get your confirmations in promptly. Also please follow your rules copy. Your are scored for each new member, and you may win one of our ten annual membership nomination awards.

The best of New Year's to you all, and keep them "Hoot'in.

Lee Sr. R. O. H. O. No. 1 W7YJE

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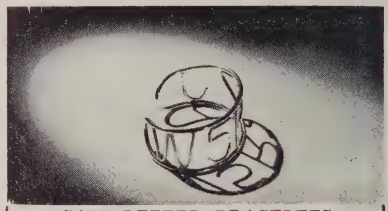

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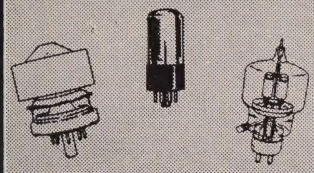

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QSL's — Box 5938, Kansas City 11, Missouri. 25 useable samples 25c. d.60

FOR SALE: Back issues of SMPTE Journal 1948 to date, in good condition. Individual copies 50c each. Jack D. Clement W6NTR, 6612 Andasol Ave., Van Nuys, Calif.

LATEST OUT: Directory listing over 350 award certificates; includes quarterly revision service. Write Cliff Evans K6BX, Box 385 Bonita, Calif. cont

QSLs, samples 25c (refundable) W6CMN, 6707 Beck, North Hollywood Calif. a.m.j.j.a s.

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FOR SALE: Globe Champion 300A new condition. 275 watts phone, 400 watts cw. Will swap, what have you? OL 2-6995 eve. cont.

SURPLUS-OF-THE-MONTH CLUB. Memberships now open for 1961!! Only $2 per year covers both dues and $1 merchandise certificate. For further details and free sample send 4c stamp to W6DIE, Dick Hinz, 833 7th Ave., Sacramento 18, Calif.

QSL's, SWL's, RUBBER STAMPS. Nicholas & Son Printery P.O. Box 11184 Phoenix, Arizona. a. s.o.n.

QSL's: Samples 10c. W7IIZ press, Box 183, Springfield, Oregon. jasond

FOR SALE: Gonset 2 meter Communicator III excellent codition $200. Also Gonset G-66-B with 3 way supply excellent condition $75. Collins 75A2 in excellent condition with xtal calibrator $300. Phone EDgewood 5-6987.

VALIANT factory wired $325, GPR-90 receiver $375. Both excellent appearance and working condition. No shipping. K6EVY, 11898 Edgewood Circle, Garden Grove, Calif. LEhigh 9-4921. j.a.

WANTED: EARLY HALLICRAFTERS RECEIVERS. SX-5, S-7, S-8A, SX-9, SX-11. SX-12, SX-18, S-20, S-22 etc. What Have you? H. Hoagland, 3036 South Robertson Blvd., Los Angeles 34, Calif. j.a.s.

FOR SALE: HT-32 like new $450. W6VRE, McNichols. MA 4-4211 Ext. 4158 jaso

RESISTORS insulated carbon latest MIL spec all values half watt 10 percent tolerance 3 cents each minimum order $1.00 prepaid shipment TEKKO 4308 Maple Ave. Dallas 19, Texas.

HAM CLUBS: Send for your free copy of the 73 Magazine Ham Club Bulletin. Write Department W.R.A., 73 Magazine News Service, 311 Rosemary Road, Toronto 10, Ontario, Canada.

ELMAC AF67 (perfect condition) $80. Slim Jim all band antenna used one month $12.50. Bud Codemaster (perfect) $12. Wonder Bar antenna and 40 ft. steel telescoping mast (both 6 months old) $15. James M-1050 power supply (perfect) $32.50. Morrow 5BR-2 converter (perfect) $39.95. H. duty antenna mount and coax $5. Will make good deal for complete rig. Can demonstrate. Power supply, converter and antenna mount must be sold together. After 6 P.M. PL 1-2953, WA6IAU.

WILL SWAP: Gonset III (12v) 50mc in new condition for: TBS-50D and H.W. power supply and VHF 152A. Or will swap for used RME VHF 126. must be in good order. Write Lee, W7YJE, 1914 Ballinger Rd., Seattle.

WANTED: RAL with power supply. Also old time double button mike, broadcast type preferred. A sensitive Scintillator also desired. Send details. W6QV, 4532 Paulhan Ave., Los Angeles 41, Calif.

MOBILE ON TEN: Compact 10 meter xmtr built in PTT & mute, VFO, run 3 watts off car radio B plus & get W.A.S. Morrow 5 band converter, all in 5" x 7" mount to fit the smallest car. Plus harness. $55. ED 2-4901, Jerry.

NOVICE Q-5er: complete. See CQ. Jan. 1956. $15. Hallicrafters S-51, good. $65. Both as is f.o.b. Amarillo. Brooks Rogers, Route 1, Box 452, Amarillo, Texas.

TWO HEATHKIT TENERS: 6 volt power supplies, xtals, mobile whips $50 each. Prop pitch motor selcyns, control box with power supply and indicator $50. WRL Globe Chief 90-A (kit) $30. Hi-Gain 8 element 6 meter beam (never used) $25. Mike Gauthier, 10425 San Jose Ave., South Gate, Calif. LOrain 9-1865. j.a.

HEATH: DX-40 & VFO. Expertly built and running cndx. with manual and cartons. Exceptionally clean $70. Call Jerry ED 2-4901.

RECEIVER: SX 100 Mark II perfect, with manual & carton. Price $220. Call Jerry, ED 2-4901.

SALE OR TRADE: Potter 1 megacycle electronic counter, measures period and frequency. Excellent condition. Cost approximately $1100. new, will sell for $275. Hewlett-Packard 500A frequency meter 5 cycles to 50kc $75. General Radio vacuum tube bridge $150. RCA WR39C television calibrator, triple crystal controlled generator, 20 to 240mc. $100. RCA WR36A Dot-Bar generator $60. Might take good transmitter or receiver. Jim Mendel, La Canada, Calif. SY 0-3756. a.s.

PRINTED CIRCUIT MATERIALS: XXXP copper laminate, 1 side (3" x 2 1-4") $.24; (2" x 4 1-2) $.25; (3" x 4 1-2) $.30; (6" x 4 1-2") $.45; (9" x 12") $1.50. Etchant 4 oz. $.35; 8 oz. $.60. Plus postage. Balance refunded with your order. Glover's Electronics, 7822 Croydon Ave., Los Angeles 45, California. a.s.o.n.

WILL TRADE: Collins S line 32S1; 75S1 (with noise blanker); 30S1; 312B4; MM-2 scope. All for late model car plus cash if necessary. K7EPD, 3850 E. Elm St., Phoenix, Arizona. CR 9-2824. a.s.

GONSET VHF POWER AMPLIFIER: RME preselector, RME Clipper, Robert Dollar mobile VHF transmitter with DC pack. Morrow 3BR5 converter, Morrow receiver, transmitter and power supply. Elmac transmitter, Elmac power supply, D-104 mike, PSA-500 power supply, 12 volt power supply. Wilma Katz AX 2-7755.

LEECE NEVILLE SYSTEM: Complete 6 volt 100 amp excel. $40.00. VHF 125 watt amplifier, 4X150A final, 230-250mc. Brand new $30.00. Tuning unit TN-1B 30-90mc brand new $10.00. Antenna tuning unit for BC-375 with antenna current meters, new $10.00. Bunge, Box 9841 SU, Tucson, Arizona.

FOR SALE: Gonset mobile twins, G-66B receiver w-110vac-12vdc power supply. G-77A xmtr. w-110vac-12vdc power supply. 90-D-3 Turner dynamic mike, Master Mobile all Bander coil. $625.00 worth purchased new, used very little. Sacrifice for $375.00 Contact Bob K6YKO, P.O. Box 166 Surfside. Calif. or Sunset Marina, Sunset Beach, Calif. GEneva 1-9156.

LEECE NEVILLE: generator with voltage regulator and rectifier. 6 volt. $45.00. PE-103 generator like new. $15.00. G.E. car radio, 6 volt with 5 band Morrow converter $60.00. ART-13 transmitter like new with 750 watt factory built power supply. $600. value, will send photos, make offer. AC 28 volt transformer $10. Other ham stuff. W6FLR, HOllywood 9-3335 6218 Lexington Ave., Hollywood, Calif.

WANTED: CE-100V and GSB-101, and chimneys and sockets for the following: 4CX300A's, 4-250A's, 4-400A's, or 4-125A's. State price and condition. Bill, W6VPO NA 4-3324, 9866 Helena Ave., Montclair, Calif.

WANTED: APR-1 Receiver in good condition with or without tuning units. Al Johson, 67 W. 10th St. Hialeah, Florida.

GONSET G-63 RECEIVER: w-xtal calibrator and matching speaker. Mint condition $175.00. 40' Globe Spire self supporting tower w-anchor base, Hi-Gain Rotorbrake and AR-22 Rotor $125.00. WA6JBB EMpire 3-0607 Northridge, Calif.

TO ALL OLD TIME WEST COAST WIRELESS OPS: Thanks for sending in photographs. If you know of any further information on wireless on the West Coast before 1918, Ships, Stations Ops or United Wireless send it to W6BLZ, 528 Colima St. LaJolla, Calif.

811 GG LINEAR: As per Mar. 59 CQ $75.00 W6BLZ, 528 Colima St. LaJolla, Calif.

WANTED: Back copies RSGB Bulletin. W5VE, 1919 West Kings Hwy., San Antonio 1, Texas.

TRIBAND BEAM: Mosley TA-33 Jr., good condition $35.00 Bob, CItrus 3-1425.

CLEANING HOUSE: Sell two MIL SPEC. plate transformers, won as door prizes, never used. Primaries 115vac, secondaries 2350vct, 340ma., $5.00 each. Simpson Model 335 Midgetester and case $3.50. Two Lambda Model 28, 300v, 100ma regulated power supplies, $5.00 each. AEI Corp. Model A-200 AF-RF Signal Generator $4.00 Miscellaneous high power parts, etc. WA6FMR, Dickens 9-1885, Don.

FOR SALE: Collins KWM-2 and all matching accessories. Collins KW-1, Gonset GSB-100-A and linear power supply, Tri-band 152TG-3 (Hy-Gain) beam, 500 watt AM-CW 813 transmitter. Many other choice items of parts. Cleaning house, so write your needs. Bill, W6VPO, 9866 Helena Ave. Montclair, Calif. NA 4-3324 eves.

FOR SALE: Viking Valiant Transmitter, perfect condition, $285.00. ElectroVoice mike and Johnson bug. Both for $15.00. 2226 W. Camden Place, Santa Ana, Calif. KImberly 5-3895.

COMPLETE 80-6 METER HAM STATION WA6HES: Hallicrafters SX-100 receiver with matching speaker, Viking Challenger 120W CW, 70W phone input. Two 6DQ6A in final. 13 xtals (6 meter), Astatic Mod. D-104 mike, Globe VFO, B&W dip meter, XC-50 series Tapetone converter, Eico VTVM, Simpson No. 260 meter, old good Solar Capacitor Analyzer, set featherweight 2,000 ohm headsets, Antenna relay, 10 meter beam 6 meter ground plane, lead ins, complete. Wave meter, plastic world globe, Weller soldering iron, 60 cigar boxes full of assorted junk box gear, nuts, bolts, washers, clips, probes, tools, etc. 3 Masco intercom masters, talk and listen. QST, Popular Electronics, Electronics World, Western Radio Amateur magazines. Power supply, manual, code records. Total cost new $1170.71, used for 1 1-2 years, sell for $500. Herbert E. Willey 625 N. Peck Rd. El Monte, Calif. GIlbert 8-0843 days, GIlbert 3-6646 eves.

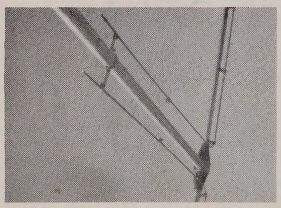
FOR SALE: Two powr. supplies, 1 chassis, 1200v 200ma, 600v 200ma $20. 200w modulator, class B w-pwr 1 chassis, rack mt. $25.; 813 final, 80-40-20 coils $20.; 7 command sets, 3 work $10. the lot; Surplus ant. tuner $2.; 2 5CPI CR tubes $1.50; ea. TU5-B 3.5mc tuning unit $1.50; New Peerless M2107T 300w universal mod xfmr $10.; New B&W CX49A cond. 50mmf $18.; Asst. heavy duty tuning cond. $3.-$5. ea.; National TML dual 10mmf 7.5kv var cond. $10.; Heath Q mult $9.; Collins 70E-8 PTO w-book $35.; BC-342 needs slight repair $15.; 2 GE pwr selsyns $10. ea.; Gas driven 6v 30a DC generator $15.; Asst small pwr xfmrs $1.50 ea.; Asst. small power supplies $4.ea.; Asst. relays, most 110vac $1.50 ea.; Mosley TA-33 3 mo. old $75.; 4 new RCA 6146 $3. ea.; New 4-125 $10.; PP 813 final w-screen supply in 36" cabinet, 80, 40, 20 KW job $50.; Hammarlund Super Pro w-supply $35. NOTE: All items cash, NO TRADES! Sundays only BY APPOINTMENT. W6CMN, 6707 Beck Ave., North Hollywood, Calif. POplar 5-8891

WANTED: One Rex Bassett five ba[illegible] no[illegible] bile coil, orginally sealed and fil[illegible] Helium. Please state condx and [illegible] De Armond, 226 Hobart A[illegible] Calif.

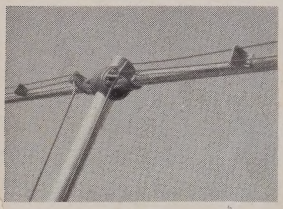
10 15 20 40

AND NOW 40 METERS WITH THE NEW hy-gain "hy-seven"

40 METER MONOBANDER WITH THE REVOLUTIONARY NEW "LINEAR LOADING"



The Beta Match — The famous Hy-Gain Beta matching system is factory pretuned. SWR guaranteed less than 1.5 to 1. Without further adjustment.



Linear Loading—The new linear loading concept reduces element length and maintains higher efficiency than coil loading.

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Now you can make 40 meters come alive with true beam performance for your rig. For the first time the Hy-Gain Hy-Seven two element 40 meter beam develops excellent forward gain and front to back in a reduced size, light weight antenna without the use of lossy loading coils. Reduction in element length is accomplished by the introduction of the new concept of linear loading. It results in three important new advantages:

1. A small easy to install antenna, that stays up!
2. Much higher efficiency than coil loaded types.
3. Virtually impervious to all weather conditions.

Like all Hy-Gain beams, the Hy-Seven is factory pretuned ready for quick and easy assembly. It's also tops in mechanical construction — with a 1 year guarantee to prove it!

SPECIFICATIONS

Mechanical: Boom, 16' x 2" O.D.; Longest Element, 43'; Material, all aluminum, high impact; Cycolac plastic and irridite treated steel hardware: Net weight only 24 pounds.

Electrical: Element spacing .13 wave lengths; Matching system, adjustable Beta; SWR at 52 ohms, 1.0 to 1; Gain 5.2 DB; Front to back ratio 15 to 30 DB.

Stacking—because of its light weight and convenient size, the Hy-Seven may be easily stacked with your existing tri-bander installation. Complete data furnished for proper installation.

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